Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

PRESERVATION OF SEEDS BURIED IN THE SOIL.

DURING the latter part of the winter of 1901–2, while the new medical building was being erected on the campus at the University of of Michigan, an excavation was made adjacent for the purpose of securing gravel and sand to be used in the masonry work. At this particular time I happened to be reviewing the literature pertaining to the vitality of buried seeds, and was thus prompted to see what this pit would yield. An investigation revealed a layer of black soil, approximately one inch in thickness, at a depth varying from fourteen to sixteen inches below the surface.

On March 7, 1902, while the ground was frozen very hard, samples of this black soil were taken from three different places, representing in all approximately two square feet of surface. This soil was then distributed in four eight-inch clay pans, which were placed in the greenhouse under favorable conditions for the germination of any seeds that were lying dormant in the soil. The pans were covered with glass plates so that no foreign seed could enter during the course of the experiment.

On March 14 pan no. 1 showed four clovers; pan no. 2 six clovers and four plantains; pan no. 3 twelve clovers and two plantains, and pan no. 4 thirteen clovers and two plantains; a total of thirty-five clovers and eight plantains in seven days. New seedlings continued to appear from day to day. The experiment was terminated on May 6, after a period of sixty days, when the entire number of seedlings had reached 128, representing seven genera and nine species, as follows: *Trifolium pratense* L., 70; *Polygonum aviculare* L., 19; *Plantago Rugelii* Dec., 10; *Euphorbia maculata* L., 8; *Panicum pubescens* Lam., 6; *Plantago major* L., 5; *Bursa bursa-pastoris* (L.) Britton, 5; *Trifolium repens* L., 3; *Anthemis Cotula* L., 2.

On inquiry it was found that the grading in that part of the campus was done in the autumn of 1898, consequently the seeds giving rise to these plants must have been lying dormant in the soil at least three and a half years.

In addition to the species named above, an examination of the soil showed the presence of many old fruits of *Ambrosia artemisiaefolia* L., but the vitality of these had been destroyed.

The conditions in this particular place were very favorable for the preservation of vitality of buried seeds. The first six or seven inches below the new surface consisted of a firm clay, below which was a mixture of clay and gravel. Directly underneath the stratum of the original surface soil which contained the seeds was a very thin layer of clay, below which was the bed of gravel and sand.

These seeds were not buried sufficiently deep to prevent them from being frozen, but the layer of clay above served quite well to protect them from the air, thus diminishing the respiratory activity, and the gravel and sand beneath furnished the best possible conditions of drainage. Under such favorable conditions the vitality of many seeds might be preserved, when buried in the soil, for a score of years or more.—J. W. T. DUVEL, *U. S. Department of Agriculture, Washington, D. C.*

CUMAPHYTISM IN ALARIA.

(WITH TWO FIGURES)

AMONG the species of Alaria displayed upon the kelp beds of the Minnesota Seaside Station, the one named *Alaria nana* by Mr. H. F. Schrader[2] has been found to show a somewhat remarkable adaptation to the surf habitat which it shares with *Postelsia palmaeformis* Rupr. along the Straits of Fuca. Plants of *Alaria nana* are found intermingled with Postelsia and form for the most part an undergrowth between the trunks of the larger kelp. Upon few rocks have there been found unmixed growths of Alaria. Last summer, however, I was enabled to examine two or three beds of *Alaria nana* which had not come under the observation of Mr. Schrader. A series of plants was collected for the laboratory work in the University of Minnesota, and two of them have been photographed to accompany these notes. Their consideration will make it apparent how strongly the Alaria type may become adapted to existence in the surf.

When growing intermixed with Postelsia the common form of *Alaria nana* is as shown in *fig. 1*. The plants will not average more than 20$^{\mathrm{cm}}$ in length. In these plants the mid-lamina is well developed, and the gonidiophylls are comparatively slender and their entire surface, with the exception of a narrow marginal region, is soral. Toward the base of a Postelsia formation the plants of *Alaria nana* average somewhat larger, and the stipes are not erect, but decline upon the rocks. Higher in the formation the size of the plants diminishes and the stipes become more erect, until well toward the top the erect habit

---

[2] SCHRADER: Observations on *Alaria nana*, sp. nov. Minn. Bot. Studies 3 : 157. 1903.